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Claims 1 and 3-10 are pending and are rejected.

Claims 1, 6, and 10 are amended.

Responsive to the rejection of claims 1, 3-7 under 35 U.S.C. §102(b) as being anticipated by Crandall (U.S. 3,919,655), and claims 1, 4, 5, and 7-10 as being anticipated by Gonda (U.S. 3,818,361), applicant has amended claims 1 and 10 to more particularly point out and distinctly claim the subject matter that applicant regards as the invention and amended claim 6 to directly depend from claim 5, which directly depends from claim 1. Applicant submits that Crandall and Gonda do not anticipate claim 1 (and its dependent claims 3-9) and claim 10 because neither reference discloses or suggests a voltage level translator having first and second voltage level translating means, each connecting a power supply terminal of an operational amplifier and a "capacitor coupled to ground" to a polarity of a split power supply, as recited in amended claims 1 and 10.

Amended claim 1 recites a voltage level translator for operating an operational amplifier integrated circuit designed for operating with a single ended power supply, to operate with a split level power supply having a center tapped ground, comprising first voltage level translating means for connecting a first polarity power supply terminal of the operational amplifier integrated circuit and a first capacitor coupled to ground to a first polarity of the power supply; and second voltage level translating means for connecting a second polarity power supply terminal of the operational amplifier integrated circuit and a second capacitor coupled to ground to a second polarity of the split level

power supply. These two bypass capacitors are shown as the two 0.1uF capacitors in FIG. 2. The purpose of the bypass capacitors is to smooth the DC voltage supplied to the operational amplifier integrated circuit. This feature is especially important when the operational amplifier integrated circuit includes two or more amplifiers, under which voltage variations presented at the power supply rails would produce cross talk among the amplifiers because these amplifiers share the same substrate and same power supply rails.

By contrast, Crandall discloses in FIG. 1 an amplifier circuit including a 741-type operational amplifier device 12 accepting an input signal to be amplified at input terminals 11 via suitable input resistors and providing an output signal to a load R_L at output terminal 13. See col. 2, lines 44-52. The circuit further includes a pair of balanced power transistors 16 and 17 respectively connected between the output terminal and positive and negative voltage sources (respectively relied upon as the first and second polarities of the power supply), which are applied to voltage supply terminals 18 and 19, respectively. See col. 2, lines 57-62. The circuit also includes biasing resistors 20 and 21 (respectively relied upon as the first and second voltage translating means) in the output transistor circuits. See col. 2, lines 62-63. One end of the resistor 20 is connected to the positive power source, and the other end to the base of the power transistor 16 and the positive power supply terminal of the 741-type operational amplifier device 12. See FIG. 1. The resistor 21 is similarly connected but to the negative power source, the base of the power transistor 17, and the negative power supply terminal of the 741-type operational amplifier device 12. See FIG. 1. However, nowhere does Crandall disclose or suggest that resistors 20 and 21 (respectively relied upon as the

first and second voltage level translating means) connecting positive and negative power supply terminals of the 741-type operational amplifier device 12 (respectively relied upon as first and second power supply terminals of the operational amplifier) and first and second capacitors coupled to ground to the positive and negative power sources (relied upon as the first and second polarities of the power supply), as recited in claim 1. As such, Crandall does not anticipate claim 1, and its dependent claims 3-9.

In fact, Crandall does not suggest connecting the power sources to capacitors coupled to ground because such an arrangement would provide a bypass, which would distort the frequency roll-off characteristic provided by the resistor 14 and the capacitor 15. See col. 2, lines 52-56. The frequency roll-off characteristic is distorted because of the impedance added by capacitors is frequency dependent, drawing variable amount of bypass current to ground depending on the frequency of the input signal. See FIG. 1.

Furthermore, claim 1 recites the feature "the output terminal of the operational amplifier is coupled to a signal load referenced to ground without any DC isolation capacitors connected in series with the amplifier." By contrast, the circuit in FIG. 1 of Crandall has the output terminal of the amplifier device 12 coupled to the load R_L with a capacitor 15 in series with the amplifier device 12. Thus, Crandall does not anticipate claim 1, and its dependent claims 3-9, for this reason alone.

Gonda also does not disclose or suggest a voltage level translator having first and second voltage level translating means, each connecting a respective power source to a "capacitor coupled to ground," as recited in amended claims 1.

Gonda discloses a voltage-power booster for an operational amplifier, including positive and negative voltage amplifier circuits connected to the positive and negative voltage supply terminals of the operational amplifier to produce output voltages for positive and negative signals, which exceed the rated output voltage of the operational amplifier. See Abstract.

For example, Gonda discloses in FIG. 5 a circuit arrangement including an operational amplifier OP5, a circuit on the positive source side, and a circuit in the negative source side. The circuit on the positive source side includes a first Zener diode having its anode connected with the positive voltage source terminal of the operational amplifier OP5 and its cathode connected with one end of a first resistor having a resistance of 330 ohms, the other end of the first resistor connected to a positive voltage source, and a PNP transistor having its base connected to the cathode of the first Zener diode, its emitter connected to the positive voltage source through a one-Kohm resistor, and its collector to the output terminal. The circuit on the negative source side is similar, which includes a second Zener diode, a second resistor with a resistance of 330 ohms, and an NPN transistor having its base connected to the anode of the second Zener diode. See FIG. 5. However, nowhere does Gonda disclose or suggest that the first and second Zener diodes (respectively relied upon as the first and second voltage level translating means) connecting positive and negative voltage source terminals of the operational amplifier OP5 (respectively relied upon as first and second polarity power supply terminals of the operational amplifier) and first and second capacitors coupled to ground to the positive and negative voltage sources (relined upon as the first and second

polarities of a power source), as recited in claim 1. As such, Gonda does not anticipate claim 1, and its dependent claims 3-9.

Furthermore, Gonda does not suggest connecting the positive and negative voltage source terminals of the amplifier OP5 to ground through capacitors because such an arrangement creates a bypass that would causes a certain amount of the audio current (which would have flowed through the first and second resistors) will be shunted to ground or supplied by the capacitors. In addition, the impedance of the capacitors decreases as frequency increases, bypassing more current to ground. As a result, the audio waveform will be more distorted as frequency increases.

In light of the fact that Crandall and Gonda, considered singly or in combination, do not disclose or suggest a voltage level translator having first and second voltage level translating means, each connecting a polarity of power source to a "capacitor coupled to ground," as recited in amended claim 1, applicant submits that claim 1, and its dependent claims 3-9, are not anticipated by Crandall and Gonda, and are patentable over these two references.

Furthermore, claim 4 recites that the voltage level translator of claim 1 includes a plurality of amplifiers on the same integrated circuit chip having a common substrate, and all of the plurality of amplifiers are also voltage level translated, the substrate being biased the same amount with respect to each of the plurality of amplifiers. Since claim 1 recites one set of first and second voltage level translating means, the plurality of amplifiers shares the same set of voltage level translating means. Incorporating multiple amplifiers in the circuits disclosed in Crandall and Gonda would require more than one set of

first and second voltage level translators. For example, the circuit in FIG. 3 of Gonda would require a set of DZ1 (relied upon as the first voltage translator means), DZ2 (relied upon as the second translator means), RD1, RD2, RE1, RE2, Tr4, and Tr5 for each amplifier. Alternatively, if all amplifiers share just one set of DZ1 and DZ2, the amplifiers will produce just one output, which is generated by the sum of current drawn by each amplifier. As a result, the single output does not represent the input signal of each amplifier and the intended purpose of the circuit is defeated.

As can be seen from FIG. 1 of Crandall, the circuit disclosed in Crandall also suffers from the above defect of Gonda. In view of the fact that the circuits in both Crandall and Gonda would be inoperative or require multiple sets of first and second voltage level translators, applicants submit that claim 4 is patentable over the two references for this reason alone.

Furthermore, claim 6 is not anticipated by Crandall as alleged. Claim 6 recites that the other circuits performing other functions and sharing the same split level power supply is a DVD player. See both claims 5 and 6. As known in the art, a DVD player normally has a voltage rating of +3.3V, +5V, or -5V. The circuit in Crandall has a voltage input of +/- 15 volts. See col. 2, lines 57-62. Thus, a DVD player cannot share the same power supply with the amplifier in Crandall. Therefore, Crandall does not anticipate claim 6.

With respect to claim 10, applicant has amended the claim to incorporate the same feature added to claim 1. Applicant submits that the arguments made above with respect to claim 1 are also applicable to amended claim 10, and submits that amended claim 10 is patentable over both references.

Having fully addressed the Examiner's rejections it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at (609) 734-6813, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No fee is believed due. However, if a fee is due, please charge the fee to Deposit Account 07-0832.

Respectfully submitted,

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I hereby certify that this amendment is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to [Mail Stop RCE], Commissioner for Patents, Alexandria, Virginia 22313-1450 on:

7-23-03
Date

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